NON-PUBLIC?: N
ACCESSION #: 9212150169
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Braidwood 2 PAGE: 1 OF 4

DOCKET NUMBER: 05000457

TITLE: Reactor Trip Due Main Generator Neutral Ground Back-up Relay Trip
EVENT DATE: 11/14/92 LER #: 92-007-00 REPORT DATE: 12/09/92

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: G. Sharpe, Technical Staff TELEPHONE: (815) 458-2801 Ext. 2544

COMPONENT FAILURE DESCRIPTION:
CAUSE: X SYSTEM: HBC COMPONENT: GENERA MANUFACTURER: B569
REPORTABLE NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On November 14, 1991 Unit 2 was in Mode 1 at 100% power. At 18:52 an oscillograph operation alarm came in followed by a main generator neutral ground back-up relay trip which subsequently tripped the turbine resulting in a reactor trip. The unit trip was the result of a failed potential transformer secondary fuse. The failed fuse was analyzed. The analysis indicated mechanical failure of the fuse. The potential transformer secondary fuses were replaced with fuses less susceptible to damage. Engineering approval was also received for the fuse replacement. As a conservative measure, all primary potential transformer fuses were replaced to address the possibility of intermittent fuse actuation. A megger was also performed on the generator and the values were found to be acceptable. Additionally, the fuse contacts on the potential transformers were cleaned nd adjusted. There has been a previous similar occurrence.

END OF ABSTRACT

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: Braidwood 2; Event Date: November 14, 1992; Event Time: 1852
Mode: 1 - Power Operation; Rx Power: 100%;
RCS AB! Temperature/Pressure: NOT / NOP;

B. DESCRIPTION OF EVENT:

There was no equipment or systems inoperable at the beginning of the event that contributed to the severity of the event.

On November 14, 1991 Unit 2 was in Mode 1 at 100% power. At 18:52 an oscillograph operation alarm came in followed by a main generator neutral ground back-up relay trip, which subsequently tripped the turbine resulting in a reactor trip. All plant systems responded normally to the event.

The following relay targets were up at Relay and Metering Panel 2PA23J:
1) Generator Neutral Ground Back-up Relay PR12-659BG2.
2) Generator Voltage Balance Relay PR5-660G2.
3) MPT 2E Generator Start-up Neutral Ground Relay PR16-850NMT 2E.

A voltage balance relay actuation can sometimes indicate a blown potential transformer fuse. The relay senses between the three phases and when a potential transformer fuse blows, the relay will see an unbalanced voltage and actuate. A review of the Sequence of Events Recorder (SER) determined that this was a result of the event and not the cause of the event.

The MPT generator start-up neutral ground relay is only involved in the circuit during start-up and thus was eliminated as a contributing cause of the event.

The generator neutral ground back-up relay senses from the potential transformer circuit. This is in the same circuit as the voltage balance relay except this relay senses from the broken delta side of the 120:120 volt potential transformer.

At 2103, November 15, 1992, a Unit 2 reactor startup was commenced.

At 2217, the startup was comple
ed. The appropriate Emergency
Notification System (ENS) notification was made at 1958, on November 14, 1992 CDST pursuant to 10CFR50.72 (b)(2)(ii).

C. CAUSE OF EVENT:

The unit trip was the result of a failed potential transformer secondary fuse which caused the generator neutral ground back-up relay to actuate, which initiated the trip. A review of the switchyard oscillograph indicated zero volts across the generator neutral resistor which means an actual fault on the generator did not occur. All potential transformer fuses were checked and one Limitron KTN-R-10 ten amp secondary potential transformer fuse was found to be failed. The failed fuse was sent to the Commonwealth Edison System Materials Analysis Department and the failure mode was found to be mechanical failure of the fuse. The potential transformer secondary fuses were replaced with Bussmann NON-10 ten amp fuses. The fuses were changed to this type after it was found that this type of fuse is utilized in Unit 1 and is mechanically more durable and less susceptible to damage. Engineering approval was received for the fuse replacement. As a conservative measure, all primary potential transformer fuses were replaced to address the possibility of intermittent fuse actuation.

D. SAFETY ANALYSIS:

This event had no effect on plant or public safety since the engineered safety feature operated as designed. The generator neutral ground backup relay actuated and tripped the generator. The generator trip caused a turbine trip. The turbine trip caused the reactor trip. Redundant trains of reactor protection RP {JG} and engineered safety features (EF) {JG} were operable, available, and effective in performing their design functions.

This event occurred at worst case condition of 100% power.

E. CORRECTIVE ACTIONS:

In addition to replacement of all potential transformer fuses (12 total), the affected circuit was monitored with a digital fault recorder. No further anomalies were found. A megger was also performed on the generator and the values were found to be acceptable. Additionally, the fuse contacts on the potential

transformers were cleaned and adjusted. As a result of LER 457-91-006, a plant modification is planned to improve the reliability of the generator neutral ground circuitry. This modification will be installed under modification number M20-1(2)-91-013.

F. PREVIOUS OCCURRENCES:

There has been a previous similar occurrence.

DVR 20-2-91-037 / LER 91-006; Generator Trip Caused By Spurious Actuation of Neutral Ground Relay

G. COMPONENT FAILURE DATA:

MANUFACTURER NOMENCLATURE MODEL NUMBER / MFG PART NUMBER
Limitron Fuse KTN-R-10

Commonwealth Edison
Braidwood Nuclear Power Station
Route #1, Box 84
Braceville, Illinois 60407
Telephone 815/458-2801

December 9, 1992
BW/92-0615

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Dear Sir:

The enclosed Licensee Event Report from Braidwood Generating Station is being transmitted to you with the requirement of 10CFR50.73(a)(2)(iv), which requires a 30-day written report.

This report is number 92-007-00, Docket No. 50-456.

K. L. Kofron
Station Manager
Braidwood Station

KLK/AJS/dla
675ZD85G

Encl: Licensee Event Report No. 92-007-00

cc: NRC Region III Administrator
NRC Resident Inspector
INPO Record Center
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